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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of)	
)	
Replacement of Part 90)	
by Part 88 to Revise the)	
Private Land Mobile)	
Services and Modify the)	
Policies Governing Them)	PR Docket No. 92-235
)	
and)	
)	
Examination of Exclusivity)	
and Frequency Assignment)	
Policies of the Private)	
Land Mobile Radio Services)	

COMMENTS OF
THE ASSOCIATION OF AMERICAN RAILROADS

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No. of Copies filed 5-9
List ABB 12

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SUMMARY

The Association of American Railroads (AAR) applauds the Commission's Refarming Report and Order for setting forth a narrowband channelization plan for Private Land Mobile Radio (PLMR) users. The Commission's channelization plan will make a significant contribution toward alleviating severe congestion and satisfying pent-up demand. AAR is, however, deeply concerned that the Report and Order's consolidation plan and the "incentives" proposed in the Further Notice of Proposed Rulemaking (FNPRM) will undermine the railroads' communications networks and pose a serious threat to public safety.

AAR responds herein to the Commission's solicitation of user input on the subject of consolidation. Consolidation of the Railroad Radio Service with other PLMR users will pose a direct threat to safety by (1) exposing railroad radio transmissions to harmful co-channel and adjacent channel interference, thereby jeopardizing the industry's requirement for clear channels; (2) increasing congestion on the railroads' already limited number of channels; (3) constraining the industry's ability to preserve nationwide interoperability; and (4) adding to the complexity of radio equipment and operating procedures. By allowing non-railroad users to be interleaved on railroad channels, consolidation of the Railroad Radio Service with other PLMR services will also sacrifice the railroads' contiguous block of spectrum which will hinder the continuing development and implementation of spectrum efficient safety devices.

The FNPRM's auction proposal will also directly and negatively impact the railroads' safety obligations. The omnibus telecommunications bill currently under consideration by Congress creates an exemption from auctions for public safety users, intended specifically to include the railroads. AAR urges the Commission to align its views with those of the

Congress and provide that any exemption from auctions for public safety use specifically include the railroad industry.

While AAR would support the Commission's shared exclusivity proposal, more accurately labelled a "protected service area," any move toward "pure exclusivity" or resale would be unnecessary and inappropriate. This is because there already exist sufficient incentives to convert to narrowband.

Because PLMR users will already have incentives to convert to narrowband and because this conversion will involve a significant investment by these same users, spectrum user fees are also unnecessary. Moreover, it is arbitrary to single out PLMR users for the imposition of users fees, especially since they are not subscription based services.

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Comments of
The Association of American Railroads

The Association of American Railroads (AAR), by its attorneys and pursuant to Section 1.415 of the Rules of the Federal Communications Commission (FCC or Commission), hereby submits its Comments in the above-captioned Further Notice of Proposed Rulemaking (FNPRM).

I. PRELIMINARY STATEMENT

AAR is a voluntary non-profit organization composed of member railroad companies operating in the United States, Canada and Mexico. These railroad companies generate 97 percent of the total operating revenues of all railroads in the United States. AAR represents its member railroads in connection with federal regulatory matters of common concern to the industry as a whole, including matters pertaining to the regulation of communications. In

addition, AAR functions as the frequency coordinator with respect to the operation of land mobile and other radio-based services.

In a 1994 Report to Congress, the Federal Railroad Administration (FRA) underscored the vital importance of the railroad industry to the national economy:

As America becomes more densely populated and its existing highway system struggles with limited capacity, the Nation will need rail transportation even more in the next century. Whether the railroad companies are able to meet this challenge will depend on a wide variety of factors...first, the railroad companies must provide service safely. Second, the railroad companies will need to direct capital investments to purposes that permit them to earn a reasonable return.^{1/}

In terms of railroad radio communications, this national mandate signifies that as demand for railroad services increases, the availability of clear radio communications for safe and efficient service will remain a preeminent concern.

The importance of safety is evident in the nature of railroad operations which involve the movement of heavy equipment, passengers and significant volumes of hazardous or toxic materials, such as liquified petroleum gas and molten sulfur, at high speeds. In 1994 alone the industry transported approximately 1.7 million carloads of chemicals and allied products, second only to coal carriage.^{2/} These are products which, because of their potentially flammable and hazardous nature, must be transported safely. The current safety record of railroads moving hazardous materials is impressive: 99.9 percent of tank-car shipments arrive incident free. Tank cars are involved in fewer than one accident or derailment per billion ton-miles. In fact, according to FRA, the rate of train accidents, the rate of employee

1/ Railroad Communications and Train Control, Federal Railroad Administration, Department of Transportation Report to Congress, July 1994 at 1 (hereafter "FRA Report")(emphasis added)

2/ AAR, Railroad Facts: 1995 Edition at 25

injuries and the number of employee fatalities were at their lowest levels in 1994.^{3/} This highly successful safety record is due in large part to the use of radio to coordinate train movement and warn of hazardous conditions.

Railroads must be guaranteed clear channels in a dedicated block of spectrum in order to carry out the important safety applications of railroad radio communications systems. Without the benefit of clear channels, transmissions relaying safety information will be blocked, interrupted, obscured or delayed. This would result in unsafe conditions and an increased risk of derailments. For example, dispatchers would not be able effectively to control train movements, ensure a safe separation between trains, and coordinate emergency response efforts; defect detectors would not be able to relay information concerning hazardous conditions; and crew members would not be able to request emergency assistance. Because the Commission recognized the paramount importance of clear channels to "assure safety of operations,"^{4/} it allocated a dedicated block of spectrum to railroad use.

In the Report and Order and in the FNPRM the Commission has proposed various measures, specifically consolidation of the Private Land Mobile Radio (PLMR) services and auctions, which, in their proposed forms, threaten seriously to compromise the railroad industry's ability to satisfy its safety responsibilities. Indeed, the Commission's proposals concerning auctions and consolidation, as applied to the railroads, run counter to safety

^{3/} FRA Accident/Incident Bulletin Nos. 154, 161, Tables 1.9 (1994 Preliminary FRA data).

^{4/} 47 C.F.R. § 90.91.

concerns buttressed by statute^{5/} and of long-standing Congressional import.^{6/} In a 1994 letter to the Commission, the FRA, one of the agencies officially charged with oversight of railroad safety, made its position quite clear when it emphasized that "[t]he Commission's continued authorization of the Railroad Radio Service is imperative."^{7/} Fundamentally at stake is the safety of rail transportation.^{8/}

AAR, therefore, urges the Commission to preserve the railroads' contiguous block of spectrum as set forth in the Railroad Radio Service definition at 47 C.F.R. § 90.91^{9/}, to treat railroads as public safety entities if auctions are implemented in the PLMR bands, and to exempt them from auctions on the same basis as other public safety entities.

In their use of radio to perform essential safety functions, the railroads and the airlines are identically situated. In this regard, the FCC must be mindful that radio is an integral element of airline and railroad safety. Just as air traffic controllers rely on clear

^{5/} See 49 U.S.C. § 20103(a) (authorizing the Secretary of Transportation to prescribe regulations and issue order for every area of railroad safety).

^{6/} See, e.g., Section 4(j) of the Radio Act of 1927, recodified in Section 303(k) of the Communications Act of 1934, 47 U.S.C. § 303(k) (allowing the Commission to exempt railroad radio systems from Commission regulations).

^{7/} Letter from Jolene Molitoris, Administrator of the FRA to Chairman Reed Hundt in PR Docket No. 92-235 (filed July 13, 1994) at 3 (hereafter "FRA letter").

^{8/} AAR submits that the goals of efficiency and safety, both laudable in their own right, are not incompatible and can be harmonized.

^{9/} Section 90.91 states that, "[r]ailroad common carriers which are regularly engaged in the transportation of passengers or property when such passengers or property are transported over all or part of their route by railroad are eligible to hold authorizations in the Railroad Radio Service to operate radio stations for transmission of communications and to assure safety of operations essential to such activities of the licensee."

channels for traffic control information, so must railroad dispatchers rely on clear channels to relay and receive track warrants authorizing passage along a particular right-of-way, to control yard movements, to warn of track obstructions or other unsafe conditions, and to coordinate emergency response efforts. The failure or degradation of either of these radio systems would result in imminent danger to the public. Because of these unique safety needs, each industry, the airlines through the Federal Aviation Administration (FAA) and the railroads through AAR, exercise exclusive control over their dedicated blocks of spectrum. This gatekeeper function is necessary to ensure that clear channels are constantly available for safety needs.

Despite this commonality of interests, the Commission is now proposing measures which would (1) force the railroads to share frequencies with users who do not rely on radio to perform safety functions; (2) result in increased co-channel and adjacent channel interference to essential railroad communications; and (3) hold railroad statutory safety obligations hostage to an uncertain auction outcome. Such results would be simply inconceivable for the airlines. They are equally so for the railroads.

The FCC's regulatory matrix is integral to rail safety. Although AAR is particularly concerned about the Commission's proposals concerning consolidation and auctions, these comments will address all of the Commission's specific refarming proposals contained in the FNPRM. AAR believes it imperative to retain the Railroad Radio Service and its dedicated block of contiguous spectrum. Since that viewpoint shapes AAR's reaction to the proposals contained in the Commission's FNPRM, these comments also present the railroad industry's response to the Commission's request for user input on consolidation. Because safety

concerns are preeminent. Part II of these comments describes railroad use of mobile radio generally and the inextricable relationship between safety and railroad radio use. Parts III-VI address the Commission's specific proposals regarding consolidation, exclusivity, resale, auctions and user fees.

II. RAILROAD DEPENDENCE ON RADIO COMMUNICATIONS

A. The Use of Radio in Railroad Operations is Ubiquitous.

The railroad industry has been making extensive use of the radio frequency spectrum for over sixty years. It is a major user of land mobile radio communications operating on the frequencies below 512 MHz that are the subject of the current proceeding. The railroads operate PLMR facilities on 91 channels around 160 MHz and on six channels in the 450-470 MHz range. On locomotives and rail equipment, along railroad tracks and in stations, terminals and train yards across the nation, railroads currently utilize about 16,400 base stations, 45,000 mobile radios, 125,000 portable radios, 5,500 defect detectors, and 56,000 end-of-train, head-of-train devices and locomotive mobiles.

The railroads have specialized communications requirements, reliability criteria and coverage needs which have led them to build, maintain and operate their own radio communications networks, rather than rely on commercial communications service providers such as the telephone companies. With regard to coverage, communications must be available where the trains are, and railroad rights-of-way in many parts of the nation are in remote areas far from any commercial communications infrastructure. Indeed, many trackside radio transmitters are accessible for maintenance and repair only by means of the

railroad track on which they are located. Even in metropolitan areas there are certain sites such as tunnels leading into and out of New York City, where there is not sufficient demand to support commercial coverage. Because of the extensive scope of their operations and the ribbon nature of their coverage (generally one half mile on either side of the tracks), in order to guarantee complete coverage, the railroads would have to negotiate with and subscribe to numerous commercial radio operators. These operators, in turn, would have to coordinate and link with each other for the benefit of the railroads. This would be an unlikely, inefficient and costly arrangement.

For relaying signal and track-switching information over their long distance networks, the railroads require a level of reliability which is many times higher than that available on circuits provided by common carriers. Railroads also depend upon reliable communications during emergencies and natural disasters. When earthquakes, floods and hurricanes occur, the circuits of the telephone companies are busy or simply do not work. In such circumstances, the railroads must rely on their own communications networks.

Since 1945, when the FCC established the Railroad Radio Service, the railroads have used land mobile frequencies for traditional functions such as end-to-end and wayside point-to-train communications. Mobile radio units with dedicated radio channels permit communications among dispatchers, yard crews, switch crews, signal technicians, mechanical and engineering crews and other personnel. Virtually all railroad employees involved in operations carry a portable radio assigned for their use, in addition to using mobile radios installed in the railroads' vehicular fleet.

The railroads' use of PLMR frequencies has continued to grow as advanced specialized radio applications -- many unique to the railroad environment -- continue to expand. New uses include data links for wayside equipment, mobile data terminals, remote switch indicators and controllers, wayside telephone, and event recorder (black box) information from locomotives, the last essential in safety investigations. Potential future applications of data links include electronically controlled brakes, and on board and acoustical defect detectors. Changes in railroad industry operations contribute to the expanded use of land mobile radio systems. For instance, radio telemetry devices are performing functions previously performed by caboose personnel. Other functions previously done manually, such as the delivery of track warrants and train orders, are now accomplished with PLMR equipment. Increased safety and redundancy requirements, automation and technological advances also are creating greater use of and dependence upon land mobile radio devices.

B. The Railroads' Communications Systems Play a Vital Public Safety Role.

Radio systems are vital to ensure safety on the nation's railroads. Radio communications are used to advise of dangerous conditions and, if necessary, to bring railroad operations to a halt to prevent unsafe operations. Radio communications between trains and work crews on the railroad rights-of-way are essential to protect railroad employees and the general public. Only radio can provide immediate information on the location, direction and speed of movement of hundreds of trains operating at the same time on the major railroads in the country.

The importance of radio spectrum for operational safety in the railroad industry has been well-documented by FRA. In its 1994 Report to Congress, FRA highlighted nine characteristics which cause the railroads to put a premium on effective and secure communications:^{10/}

1. The size and weight of rail equipment makes train operations an extremely powerful and potentially destructive force.
2. This potential is magnified by the long stopping distances inherent in operation of heavy rolling stock using steel wheels on steel rail.
3. Operations are conducted over an extensive network of rail lines spanning lightly developed rural and wilderness areas as well as highly developed urban and suburban areas.
4. Railroads must contend with over 280,000 highway crossings at grade and countless other locations where pedestrians and vehicles may come into conflict with train movements.
5. The railroads face challenges presented by natural disasters and often rapidly changing weather conditions.
6. Consistent with productivity and safety objectives, the number of railroad employees and supervisors has been substantially reduced.
7. Train speeds have risen in response to service requirements, particularly for highly competitive services.
8. Density of track occupancy has risen due to downsizing of plant and unexpectedly strong demand for rail service.
9. Elements of prior communications systems, such as pole lines, have outlived their useful lives and are being replaced by alternatives that are less costly to maintain.

The FRA Report reviewed in detail the various types of railroad communications systems, including those used for train movement and control, switching operations, defect

^{10/} FRA Report at 1-2.

detection and emergency response, and concluded that radio communications are an integral part of railroad safety planning and execution:

Just as radio communications can be employed to save life after a train accident or incident, radio can be used to prevent serious accidents. Where automatic means of warning are not feasible or not provided (e.g., for broken rails, dangerously high water, fallen trees, derailed equipment fouling an adjacent main track, bridge damage from barge operations, etc.) radio communications may provide the last opportunity for accident avoidance....FRA is aware of numerous occurrences where use of voice radio has permitted accident avoidance or has significantly mitigated the severity of an accident.^{11/}

Telemetry systems for remote control and defect detection utilize PLMR frequencies to perform safety functions. These devices are a key component of the railroad industry's program for preventing derailments and other types of accidents and have led to a major reduction in accident rates, particularly over the last ten years. For example, journal detectors measure the temperature of the axle bearings of a railroad car as it passes over the detector. A radio transmission then alerts the train crew to stop the train and inspect the journal to determine whether to remove the car in question or proceed at reduced speed. This is not an unusual occurrence; in fact these detectors will stop trains several times a week on each railroad. Similarly, wheel detectors identify railroad cars with malfunctioning brakes. High-wide detectors are used to detect shifted cargo and give warning prior to entry into tunnels. Dragging equipment detectors are used to ascertain the presence and location of loose equipment on the undercarriage of train cars which can become jammed in tracks and cause derailments.

As trains pass these detection devices, mobile radio transmits readings to crew members and, by telemetry links, to the dispatcher. In the event defects are detected, train

^{11/} Id. at 22-34.

crew personnel are required to stop the train, inspect it and take remedial action.

Dispatchers, in turn, are able to alert other trains on the line. Often the defects detected are not serious. The rate at which defects are detected, however, and the railroads' improved safety record over the last several years clearly demonstrates that such devices are needed and do their work. In addition, end-of-train devices provide a remote radio telemetry link between the end of the train and the crew members in the locomotive. By means of this radio link, the train crew is able to assess the adequacy of the braking system. FRA is currently in the process of establishing regulations to mandate two-way end-of-train devices by which the locomotive engineer can initiate via radio frequency an emergency brake application at the rear of the train.

Mobile radio links are also used for the remote control of "slave" locomotives -- additional locomotives placed in the middle of a train without crew members. Because the use of slave locomotives distributes motive power throughout a train rather than locating it at a single forward point, the railroads are able to move longer trains more safely than would otherwise be possible.

Extensive documentation exists concerning the use of railroad radio communications to avert accidents and coordinate rescue efforts. For example, a railroad radio channel was the means used to obtain emergency assistance upon the occurrence of a tragic derailment in 1993 involving a maritime vessel which caused the death of 47 passengers and crew aboard

an Amtrak train.^{12/} Attachment A presents an illustrative but by no means exhaustive sampling of anecdotal information on the safety applications of railroad radio systems.

C. Railroad Use of Radio Systems for Law Enforcement

In addition to enhancing the safety of train movements and related operations, radio communications networks are used extensively to support another safety-related aspect of the railroad business: law enforcement. The railroad industry employs approximately 2,000 railroad police officers nationwide, who, under federal law (49 U.S.C. § 26101), are authorized to enforce the laws of any jurisdiction in which a railroad owns property for the purpose of protecting the property of the railroads and their customers and the lives of employees, passengers or patrons of rail carriers. On railroad property, railroad police have arrest authority identical to that of state and local police, and often are called upon to coordinate their work with local law enforcement officials. Radio communications systems are used by railroad police departments in exactly the same manner as systems operated by state and local police departments, *i.e.*, for surveillance, dispatching, undercover operations, tactical support, investigations, pursuits, and the like.

Moreover, on countless occasions the ability of railroad police to communicate via radio has proved instrumental in saving lives and averting accidents. For example, in July 1995, a Conrail police officer observed a trailer hanging over the side of a flatcar on a

^{12/} See Report of National Transportation Safety Board ("NTSB"), PB 94-916301, NTSB/RAR-94/01, adopted September 19, 1994, Notation 6167B, at 1, 8. The NTSB found that the passenger train derailment in a bayou near Mobile, Alabama, was caused by the dislocation of a railroad bridge that was struck by a maritime vessel (a barge under tow) in heavy fog, resulting, in part, from the lack of radar navigation competency on the part of the maritime personnel operating the towing vessel. *Id.* at 59, 61.

passing train. The officer was able to contact the train engineer by radio in time to have the train stopped before reaching a tunnel. But for the ability to communicate this information quickly by radio, the trailer would have struck the wall of the tunnel upon entry causing a major derailment.

III. THE COMMISSION MUST PRESERVE THE RAILROAD RADIO SERVICE

The Commission proposed in its Report and Order to consolidate the existing Part 90 service groupings into broad cross-category pools.^{13/} Since the Commission released its Report and Order on June 23, 1995, requesting user input on consolidation, AAR has been participating in broad-based discussions on the subject. AAR's participation in these meetings has reinforced its view that the Commission's final rules on this subject must preserve the Railroad Radio Service and its dedicated frequencies in order to ensure safe and efficient railroad operations.

These comments have highlighted many of the unique safety functions of railroad radio systems. The scope and complexity of the industry's safety concerns are magnified by the nationwide coverage of railroad operations. The industry must have clear, contiguous channels to satisfy its safety needs and also must retain the right to determine who shall have access to railroad radio frequencies and whether to share particular frequencies with non-railroad users. For the past five decades, railroad control and coordination of these channels have provided dedicated railroad use which ensures safe operations by avoiding or

^{13/} Replacement of Part 90 by Part 88 to Revise the Private Land Mobile Radio Services and Modify the Policies Governing Them, Report and Order in PR Docket No. 92-235 at ¶ 55 (June 23, 1995)(hereafter "Refarming Report and Order").

minimizing interference from other railroad users. The FCC has provided no workable alternatives to the present system that even come close to providing the same assurances.

A. Only A Separate Railroad Radio Service Ensures Rail Safety

Consolidation of the Railroad Radio Service with other PLMR services will pose a direct threat to safety by jeopardizing the railroad industry's requirement for clear channels, exposing railroad radio transmissions to harmful interference from a multiplicity of sources, increasing congestion on the railroads' already limited number of channels and adding to the complexity of radio equipment and operating procedures. Consolidation with other users will eliminate the designated channels set aside for sharing by the railroad industry and make all channels within the new pool available for sharing by all users within the new pool, subject only to "coordination." This will allow non-railroad users to be interleaved with railroad users, thus sacrificing the railroads' contiguous block of spectrum. Moreover, any frequency coordinator, whether or not it knew anything about the intricacies and complexities of railroad operations and its unique safety needs, could make decisions as to whether to allow use of railroad channels by another entity. In short, consolidation of railroad spectrum with that of other users is a recipe for disaster, and the Commission should reject any attempt to eliminate the Railroad Radio Service.

1. Railroads Cannot Lose Control Over Their Frequencies

The FCC's proposal is a drastic departure from the present system where the decision to allow non-railroad shared use of a channel is made by the railroad industry itself, based on the type, nature and location of a railroad's use of a particular frequency. Currently, under the inter-service sharing process, the railroads do allow non-railroad users access to railroad

channels where doing so would not jeopardize railroad operations. Elimination of the Railroad Radio Service would entail a loss of control over that decision and would unquestionably interfere with the adequacy of railroad radio communications.

In its need for extremely reliable communications and dedicated frequencies, the railroad industry is no different from the airline industry. Both the airlines and the railroads depend on radio to ensure safety in their daily operations. Just as an air traffic controller uses radio to relay flight information and to advise of potentially dangerous conditions, so do train dispatchers depend on radio to coordinate and control train movements by conveying track warrants authorizing passage along the railroad right-of-way, and to relay information regarding track obstructions, severe weather conditions and other potentially hazardous conditions. The risk of a lost, jammed or obscured radio transmission is simply not acceptable to either industry.

This requirement for extremely high reliability has led to each industry maintaining exclusive control over its specific radio frequencies. The FAA controls frequency assignments for its 760 radio channels nationwide, as does the rail industry for its 97 radio channels.

The authority of each to control access to its radio frequencies is rooted in safety. The FAA's safety obligation is set forth in 49 U.S.C. § 44701. In recognition of the fact that railroads must operate safely, Congress has conferred upon the Secretary of Transportation broad authority to prescribe regulations and issue orders "for every area of railroad safety." 49 U.S.C. § 20103(a). The Department of Transportation, through FRA

has adopted broad safety-related operating procedures and requirements governing the use of two-way radio communications systems by the railroads.

It would be inconceivable to compromise air traffic control transmissions by exposing them to interference from outside sources. It is equally inconceivable to expose the railroads to such interference. The Commission, therefore, should reject any consolidation plan which would jeopardize the quality of railroad communications and pose a direct threat to safety in the process.

2. Consolidation of the Railroad Radio Service With Other PLMR Services Will Result in Increased and Harmful Interference

The consolidation of the Railroad Radio Service with other PLMR services will expose railroad users to interference from diverse users ranging from electric utilities to taxicab fleets. The interference will be caused by co-channel or adjacent channel non-railroad users operating in close proximity to railroad users. Moreover, because railroad mobiles are not tied to a fixed point, they will be particularly susceptible to interference from non-railroad users because those users will not know the location of railroad mobiles and, therefore, will likely interfere with the mobiles.

The threat of interference will be particularly acute in the new pooled environment because of the wide variety of systems interacting side-by-side at different bandwidths and modulation schemes, such as digital, analog, and linear modulation. Furthermore, consolidation will make it much more difficult to isolate the source of interference coming from other transmitters because different users could employ different operating protocols. Without the same operating protocol to "decipher" the transmission, all that would be heard

from an interfering transmission would be noise. This will make the resolution of harmful interference a much more lengthy and complex process.

Railroads have a powerful incentive quickly to uncover and resolve interference because of their common operational experience and shared safety concerns. The majority of users that would be pooled with the railroads, however, do not have either the same commonality of interests or the appreciation of railroad safety concerns to be sensitive to the dangers of interference to railroad radio transmissions. These other users have indicated in a variety of settings, including the industry meetings on consolidation, that their prime concern is access to additional frequencies. In a pooled environment there is a serious risk that non-railroad users would not have the knowledge or inclination adequately to protect railroad safety concerns.

For example, in late 1994, the Utilities Telecommunications Council (UTC), on behalf of Connecticut Natural Gas (CNG), requested through the interservice sharing process a frequency that was licensed to Conrail. Conrail uses that particular frequency for its heavy maintenance rail gangs as well as for those that repair and rehabilitate the track structure. Communication between and among these crews and between dispatcher and crew is necessary to facilitate repair, to authorize trains to pass through a work area and to direct the work crew to clear the area to allow the passage of trains. In this case, the Conrail channel was monitored during the winter months when the weather makes production too costly and work generally slacks off. Because of this unrepresentative monitoring CNG believed the channel was available. CNG also claimed that interference would be unlikely because CNG proposed to use Continuous Tone Coded Squelch systems, ignoring, or perhaps not aware of

the fact that Conrail radios use carrier squelch and, therefore, would suffer direct interference from CNG transmissions. If consolidation had been in effect when this request was made, a frequency coordinator other than AAR would have had the power to grant the assignment application, despite the fact that its information on the actual channel use was inaccurate and that grant of the application would have resulted in interference to radio communications used to protect train crews working on or passing over the railroad right-of-way. Fortunately, AAR was able to assess the safety risk.

The increased interference which would result from consolidation of the Railroad Radio Service with other PLMR services would make it especially difficult for railroad radio safety devices such as end-of-train devices, defect detectors and slave locomotive controls to operate effectively. Such results would directly threaten transmissions from defect detectors warning of rock slides, wash-outs, or overheated axles; transmissions to slave locomotives signalling the need to accelerate or decelerate; and transmissions to and from end-of-train devices allowing the train crew to ascertain the brake system status and to apply the brakes in an emergency situation.

Increased interference will also compromise voice communications, especially in metropolitan areas where congestion is already a serious concern. Vital communications will be lost or obscured by interference, including communications from dispatchers to train engineers warning of dangerous conditions ahead or directing a train to stop because of a track defect or an obstruction on the right-of-way, and communications from train crews to dispatchers requesting emergency assistance or coordinating response efforts.

The need for clear channels in emergencies was evident in August 1994 in Toledo, Ohio when an alert signal supervisor discovered bolts missing from the railroad track. Because of the missing bolts, the track was seriously out of alignment, a condition that could have provoked a derailment. The signal supervisor immediately radioed the Conrail dispatcher who was in turn able to relay a stop order to an approaching train. There can be no risk that such communications could be obscured or blocked by interference from non-railroad users.

The importance of split-second timing in railroad operations is not always fully appreciated. For example, in March 1995 a Santa Fe train conductor noticed a man lying on the railroad tracks. The man's life was saved because the conductor could quickly radio the yard dispatcher who in turn radioed an oncoming train to stop.

If railroads are forced to share radio spectrum with non-railroad users and are not able to exercise control over the degree and scope of sharing, railroad channels will quickly resemble citizens band (CB) radio operations. CB channel users have little control over people who are listening as well as those who are interfering with conversations and transmissions in progress.

3. Consolidation of the Railroad Radio Service With Other PLMR Services Will Compromise Safety by Increasing the Complexity of Railroad Equipment

Consolidation of the Railroad Radio Service with other PLMR services will also lead to unsafe conditions by increasing the complexity of railroad radio equipment. Safety in railroad operations depends on simplicity in the design and use of equipment. A radio that is easy to use will save lives; one that is overly difficult to use courts disaster. If the railroads

are forced to share their allotted spectrum with non-railroad users. they would be competing for channels in other PLMR radio bands in the pool. Because of the nationwide scope of railroad operations, this use of additional channels will require railroad radios to be capable of tuning hundreds upon hundreds of channels, depending on the number of channels within the pool. This type of radio would be extremely complicated and confusing for train employees to operate even with extensive training. The Commission's proposal will force the railroads to move in precisely the wrong direction: toward complicated radios inherently more difficult to operate than the two-way radio equipment presently installed in locomotives and carried by railroad personnel.

4. A Separate Railroad Radio Service Ensures Safety by Guaranteeing Nationwide Interoperability

Nationwide interoperability is an essential component of an effective railroad safety program because it guarantees uniformity in operations. Although each railroad is autonomous, together the railroads comprise a single nationwide network.

A fundamental characteristic of railroad use of the radio frequency spectrum is sharing of facilities and frequencies on a nationwide basis. Because of these sharing arrangements, mobile radio equipment must be interoperable from one railroad to another, and common frequencies must be used throughout the entire railroad industry. For example locomotives and other radio-equipped rolling stock owned by one railroad routinely travel over tracks and through terminals operated by other railroads and, therefore, must be able to communicate with (1) dispatchers issuing track warrants authorizing use of a given stretch of main line track, (2) yard masters and switch crews engaged in assembly and disassembly of